

the diversion of a grass driving road which now cuts across the earthwork, without prejudice to any legal question.

To prevent other stones from falling it is suggested by the societies mentioned that the trilithon which has slewed round and also a leaning-stone be first examined with a view to maintaining them in safety. It is understood that no excavation beyond what is absolutely necessary will be allowed. This examination will show what can be done and ought to be done with all the standing Sarsens. It is advised that the monolith and lintel, which fell three months ago, be replaced, the companion Sarsen being made safe against the effects of the fall. Further, the societies recommend the erection of the great trilithon which fell in 1797, the exact place of which is known. All the rest they would leave as it is, though in some cases the place of fallen stones is known with fair certainty. The questions of how best to fix more firmly in the ground the stones now standing, and how best to re-erect the two trilithons which have fallen in the last 104 years, is left to engineering experts.

A STUDENT'S DRUM RECORDER.¹

THIS admirable instrument consists of five parts easily detachable, viz. (i.) an adjustable tripod, which carries on one foot (ii.) a steel bracket for the attachment of the appendances incident to an observation; and (iii.) a central adjustable rod so fashioned as to receive (iv.) the drum, the heads of which are widely perforated for purposes of manipulation; and (v.) a clockwork driver, which is keyed at two points for inser-

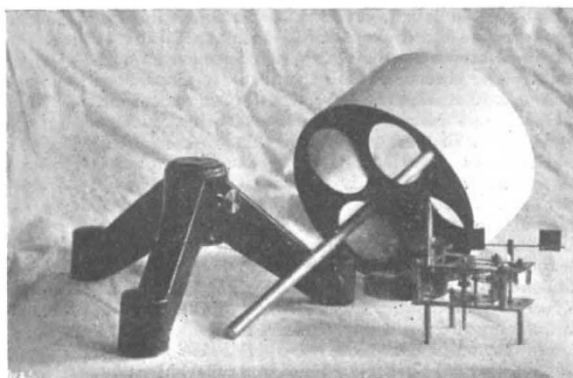


FIG. 1.—A Drum Recorder dismounted to show its parts.

tion into the head of the rod. The special novelty of the instrument lies in the driver, which is so constructed that when at work it and the drum are together rotated. The driver is, moreover, set in a metal framework supported upon three feet, upon which it rests when not in use, adequately protected. Its working parts are all exposed, and there are no accessories. The arbor of the spring-wheel above, and of the main driving-wheel below, are each so keyed as to fit into the head of the rod or axle, the former being intended for slow motion, the latter for quick. For one winding the drum will run at its most rapid rate for 12-13 minutes, at its slowest for 16-17, allowance being made for adjustment of the wings of the "fly," which as a whole can be itself easily removed to ensure the maximum obtainable speed. The instrument is a triumph of ingenuity and good workmanship, and we have nought but praise to accord it. To produce at little more than one-fourth the price of the conventional drum-recorder a substitute in efficiency its equal, is to deserve well of the scientific public. This drum supplies a want long felt by teachers, and is bound to become popular. We heartily wish it the success it deserves.

¹ By W. E. Pye and Co., "Granta Works," Mill Lane, Cambridge. Price 70s.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

MR. HERBERT F. ROBERTS, instructor in botany in Washington University, at St. Louis, Missouri, U.S.A., has been elected to the chair of botany in the Kansas State Agricultural College.

For the last two or three decades the engineering profession of Austria and Hungary spared no efforts to raise the technical institutions throughout those countries to the standard of the universities and to obtain for the former some of the more important academic privileges and powers which the latter have enjoyed since their establishment. The first aim of the leading members of the said profession was that the technical institutions should be authorised by the Government to grant degrees which, from an academic point of view, should be regarded as equal to those granted by the universities. We now notice, therefore, with satisfaction that their endeavours have been finally crowned with the desired success, and that the Minister of Public Instruction in Austria held, on April the 4th, a meeting which was attended by representatives of almost every technical institution in that country, and on this occasion announced the Government's intention of introducing a special statute by means of which the technical high schools should be empowered to confer the degree of Doctor of "Rerum Technicarum" upon students whose scientific attainments entitle them to that distinction. A special examining body will be appointed for that purpose, and some of the examiners, it is urged, should be at the same time members of the teaching staff in connection with some of the universities; the examinations, again, will be conducted on the same lines as those prescribed by the philosophical faculty of a university for the bestowal of the degree of Ph.D. The acquirement of that degree, however, will not—at least for the present—be made compulsory for all students of the technical academies; those, on the other hand, who attain it will, of course, be given special precedence in the case of Government appointments, which are usually accessible to all graduates of the recognised technical institutions by open competition.

SCIENTIFIC SERIALS.

Bulletin of the American Mathematical Society, March.—Prof. T. F. Holgate reports the December meeting of the Chicago section of the Society (December 27 and 28, 1900), and gives abstracts of several of the twenty-two papers which were read. In addition there is printed a paper by Prof. Hathaway on pure mathematics for engineering students, which was followed by an interesting discussion. The subject was treated under the heads (1) its utility; (2) methods of instruction; (3) the course; and (4) the instructor.—A paper read by Prof. Newson, at the February meeting, on indirect circular transformations and mixed groups, is supplementary to a paper entitled "Continuous Groups of Circular Transformations" (which appeared in the *Bulletin* for December, 1897), and deals with indirect circular transformations and the mixed groups obtained by combining these with the direct transformations. Prof. E. W. Brown reviews, at some length, the scientific papers of J. Couch Adams and the lectures on the Lunar theory, (vol. ii. Parts 1 and 2), edited by Profs. R. A. Sampson and W. G. Adams. Then follows, in English, the notice on M. Hermite, by M. C. Jordan, an address delivered at the meeting of the Paris Academy of Sciences, January 21, 1901.—The notes, as usual, cover a wide ground, and there is the usual portion appropriated to new publications.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 14.—"On the Ionisation of Atmospheric Air." By C. T. R. Wilson, F.R.S., Fellow of Sidney Sussex College, Cambridge.

In a preliminary note (*Camb. Phil. Soc. Proc.*, November 26, 1900) it was stated that a body, charged with electricity and suspended within a vessel containing dust-free air, loses its charge by leakage through the air. The same conclusion was arrived at by Geitel in a paper published a few days previously (*Physikalische Zeitschrift*, 2 Jahrgang, No. 8, pp. 116-119). The leakage

was in each case attributed to the continuous production of ions throughout the volume of the air. In the present paper a description is given of the apparatus used in Mr. Wilson's experiments, and of further results obtained with it. The air, in most of the experiments, was contained in a glass bulb, coated internally with a layer of silver sufficiently thin to enable the position of a gold leaf within the vessel to be read by means of a microscope. The gold leaf was attached to a narrow brass strip, fixed by means of a sulphur bead to a brass rod passing through the neck of the bulb. The brass strip and gold leaf formed the whole of the system of which the fall of potential was observed; the capacity was thus very small. To avoid all danger of being misled by leakage through the insulating support, the rod, to which the leaking system was attached by the sulphur bead, was kept at constant potential by means of a condenser of zinc plates embedded in sulphur. By a momentary contact, brought about with the aid of a magnet, the initial potential of the leaking system was made equal to that of the supporting rod. The rate of leakage in air at atmospheric pressure corresponds to the production of about twenty ions of either sign in each c.c. per second; the ionisation is approximately proportional to the pressure. Experiments made with a portable apparatus showed that the ionisation in a closed vessel is the same when the experiment is performed in an underground tunnel as above ground. It appears, therefore, not to be due to the action of ionising radiation which has traversed our atmosphere.

"The Chemistry of Nerve-degeneration." By Dr. F. W. Mott, F.R.S., and Dr. W. D. Halliburton, F.R.S.

Linnean Society, March 21.—Mr. F. D. Godman, F.R.S., vice-president, in the chair.—Mr. J. E. Harting exhibited and made remarks on some photographs of female roedeer (*Capreolus caprea*) bearing antlers, one of which had been shot at Neudau, in East Styria, in December last.—Mr. H. J. Elwes, F.R.S., considered the case so remarkable and unusual as to suggest the probability of some mistake having been made in determining the sex. Mr. Harting, in reply, stated that this was by no means unique. In Germany, where roedeer are much more plentiful than in this country, several does with antlers had been recorded. Dr. Altum, in his *Forstzoologie* (Bd. i. p. 211), states that many such cases were known to him. One instance noted in the Black Forest at Kippenheim is mentioned in *The Zoologist*, 1866, p. 435. In that case the horns were "in the velvet," but perfectly hard; one was about 6 in. long with a single short tine, the other about 3 in. without any tine. A female roe with budding horns was shot in October 1875 by Mr. Duncan Davidson, of Inchmarlo, Banchory, Aberdeenshire. The skull of another in the museum of the Royal College of Surgeons, forwarded from Petworth Park, Sussex, by Lord Egremont, is figured in the *Proceedings of the Zoological Society*, 1879, p. 297. Mr. Harting also pointed out that such cases were not confined to the genus *Capreolus*, but had been noted rarely in *Cervus elaphus*, and once in the case of the American white-tailed deer *Cariacus virginianus* (shot in East Kootenay, British Columbia), a photograph of which he exhibited.—Mr. P. Chalmers Mitchell read a paper entitled "The Anatomy and Morphology of the Intestinal Tract in Birds; with Remarks on the Nomenclature and Valuation of Zoological Characters." He described the various conformations of the intestinal tract in birds, his material consisting of many hundreds of specimens belonging to all the living *Ratitæ* as well as all the orders and suborders and nearly all the families of *Carinatae*. He discussed the morphology of the tract, distinguishing, in their adult anatomy and in their relation to the embryonic metamerism, the duodenum, Meckel's tract, and the rectum. He described the nature and distribution of the changes in these organs and in Meckel's diverticulum, and the colic *cæca*, and gave an account of a remarkable and hitherto undescribed series of nervous structures belonging to the autonomic nervous system apparently peculiar to birds. In discussing the relation of the series of facts described to the systems of avian classification, he insisted on the primary necessity of valuing characters as archicentric or apocentric, primitive or specialised. A common possession of a character in either the archicentric or apocentric condition was no indication of systematic affinity. Amongst apocentric characters he distinguished between *multi-radial apocentricities* (many of which were plastic effects and afforded no guide to affinity) and *uniradial apocentricities* which had arisen by a limitation and definition of variability in a particular branch of the family tree.

Geological Society, March 20.—J. J. H. Teall, V.P.R.S., president, in the chair. Prof. Friedrich Johann Becke, of Vienna, was proposed as a foreign correspondent of the Society.—Mr. H. B. Woodward called attention to a polished slab of landscape marble, or cotham stone, from the Rhaetic Beds near Bristol, which had been lent for exhibition by Mr. Frederick James, curator of Maidstone Museum. The specimen showed that after the arborescent markings had been produced in the soft mud, some irregular and partial solidification took place in the upper layers of the deposit; and then during contraction a kind of subsidence occurred of the upper and harder portions into the lower and softer materials. This subsidence was accompanied by a breaking-up of the harder portions, suggesting a comparison (in miniature) with "broken beds" and even crush-conglomerates. The specimen was of considerable interest, as illustrating the mechanical changes produced during solidification. The following communications were read:—On a remarkable volcanic vent of Tertiary age in the Island of Arran, enclosing Mesozoic fossiliferous rocks (communicated by permission of the Director-General of H.M. Geological Survey). Part i. On the geological structure, by Benjamin Neeve Peach and William Gunn. The rocks which form the subject of this paper cover an area of about seven or eight square miles, and culminate in Ard Bheinn A'Chruach and Beinn Bhreac. They are in contact with formations ranging from the Lower Old Red Sandstone to the Trias, and are later in date even than the important faults of the area. They are made up partly of fragmental volcanic materials, and partly of various intrusive masses, confined within an almost unbroken ring of intrusive rocks. In addition to igneous fragments the clastic volcanic rocks contain fragments derived from the surrounding formations; and also masses of shale, marl, limestone and sandstone belonging to formations not now found *in situ* in the island. One of these is several acres in extent, contains fossils, and is in part of Rhaetic age; a second is a fragment of Lias; and a third is of limestone and chert resembling the Antrim Cretaceous rocks, and yielding fossils. The absence of Oolitic and older Cretaceous seems to indicate a resemblance between a former succession in Arran and that now seen in Antrim.—Part ii. "Palæontological Notes, by E. T. Newton, F.R.S. The masses of Rhaetic strata yield *Avicula contorta*, *Pecten valoniensis*, *Schizodus* (*Axinus cloacinus*, etc.; those of Lower Lias *Gryphaea arcuata*, *Ammonites angulatus*, and new species of *Nuculana* and *Tancredia*, which are figured and described. Thin slices of the Cretaceous limestones prove to be very like those of the Antrim chalk, and the rocks yield determinable foraminifera, *Inocerami*, sponges, and echinoderms.—On the character of the Upper Coal Measures of North Staffordshire, Denbighshire, South Staffordshire and Nottinghamshire; and their relation to the productive series, by Walcot Gibson (communicated by permission of the Director of H.M. Geological Survey). The Upper Coal Measures of North Staffordshire are capable of a fourfold subdivision, the groups representing a definite sequence of red and grey strata.

MANCHESTER.

Literary and Philosophical Society, March 19.—Charles Bailey, vice-president, in the chair.—Mr. E. F. Morris exhibited two drawings of recent excavations in the Roman Forum. The one represented a rostrum, stated to be that from which Antony delivered his famous speech. It is built of tufa and concrete, and consists of five little vaulted rooms, as seen in the well-known medal of Palikanus. The other was a sketch of a little *ædicula* in brick work, the front decorated with two marble columns supporting an architrave on which is carved the name of the deity (Juturna) to which it was consecrated. In front of it is a circular well with an elegant marble head, ornamented with a carved cornice bearing an inscription stating that the well was consecrated to Juturna by Marcus Barbatius Pollio. Before the well is a marble altar with a sculptured front, on which are the figures of Mars and of a female deity—Juno or Venus. Signor Boni has also brought to light the celebrated fountain of Juturna, which is enclosed by a spacious rectangular construction in tufa-work of the Republican epoch. The water now gushes out fresh and clear, in abundance. The sculptures in the room enclosing the spring were also described.—Mr. Thomas Thorp showed photographs of the spectrum of the new star in Perseus, showing the bright lines very clearly. Mr. Thorp also described a variation in the ordinary arrangement of a star spectroscope, in which the eye-piece of the telescope used is replaced by a

doublet, one of the elements of which is a long focus lens which can be tilted and by that means made to yield a band of light in place of the line, an effect ordinarily secured by means of a cylindrical lens, as in Maclean's method.—The macro-lepidoptera of Sherwood Forest, by J. R. Hardy. The paper contained a list of 269 species collected in the course of the past twenty-two years, mostly in the district between Worksop, Edwinstowe and Chekerhouse. All the species, some of which are peculiar to the district, have been deposited in the Manchester Museum.

PARIS.

Academy of Sciences, April 1.—M. Fouqué in the chair.—A general proposition in the calculus of probabilities, by M. A. Liapounoff.—On the deformation of the general paraboloid, by M. Servant.—On the sum of the angles of a polygon with multiple connection, by M. M. d'Ocagne.—Studies in psycho-acoustics, by M. F. Larroque.—On the electro-capillary properties of some organic compounds in aqueous solution, by M. Gouy. If H is the maximum height of the column of the capillary electrometer with a given solution of a standard electrolyte, and H' the maximum height after the addition of an organic substance, then $1000(H-H')/H$ is a constant which varies with a constitution of the body and which varies with dilution in a characteristic manner. Preliminary measurements are given for a number of organic substances.—On some osmyloxalates, by M. L. Wintrebret. The osmyloxalates form a well characterised series of salts, details being given of the mode of preparation and properties of the salts of sodium, ammonium, silver, barium, strontium and calcium.—On the reducing properties of magnesium and aluminium, by M. A. Duboin.—On cinchonine, by MM. E. Jungfleisch and E. Léger. Ordinary commercial cinchonine always contains a variable quantity of hydrocinchonine, the separation of the latter being a somewhat tedious process. The physical constants of the purified cinchonine salts were determined and found to differ considerably from the accepted figures.—On some iodo-derivatives of phenol, by M. P. Brenans.—The action of the esters of dibasic acids upon the organometallic compounds, by M. Amand Valeur. The reaction of magnesium methyl iodide with the esters of oxalic, malonic and succinic acids was found to correspond with the action of the same reagent upon the esters of monobasic acids, except that with ethyl malonate an additional molecule of water is split off with the formation of an unsaturated alcohol.—On the organometallic compounds of magnesium, by MM. Tissier and Grignard. The principal product of the action of magnesium upon an alkyl iodide or bromide in ethereal solution is a compound of the type $C_nH_{2n+1}-Mg-I$, and this, on treatment with water, gives the hydrocarbon C_nH_{2n+2} . In the higher members of the series a secondary reaction takes place in which the hydrocarbon $C_nH_{2n+1}-C_nH_{2n+1}$ is formed. Thus secondary hexyl iodide gives hexane and dihexane.—Some new reactions of the organomagnesium compounds, by M. Ch. Moureu. Magnesium ethyl iodide reacts easily with amyl nitrite, giving diethyl-hydroxylamine. Nitroethane gives the same product, the reaction appearing to be a general one.—On the organomagnesium derivatives, by M. E. E. Blaise.—On a new synthesis of aniline, by M. George F. Jaubert. Benzene and hydroxylamine hydrochloride, heated with aluminium chloride, give traces of aniline.—On the mechanism of lipolytic reactions, by M. M. Hanriot.—On the internal organisation of *Pleurotomaria Beyrichii*, by MM. E. L. Bouvier and H. Fischer. Studies of the digestive tube and nervous system of this animal.—The sexual variation in the males of certain Coleoptera belonging to the family of the Bostrychides, by M. P. Lesne.—On the mode of production of eggs in *Trochus*, by M. A. Robert. The eggs of *Trochus conuloides* are produced in a long cylindrical string exactly resembling those of *Tr. granulatus*.—On the comparative value of saline and sugar solutions in experimental teratogenesis, by M. E. Bataillon.—On the origin of the paranuclei in the cells of the digestive gland of the crayfish, by M. P. Vigier.—Influence of the climatological conditions upon the growth of the shoots of the vine, by M. F. Kövessi.—The comparative study of the zoospore and the spermatozoid, by M. A. Dangeard.—New cytological researches on the Hymenomyces, by M. René Maire.—On a conidian form of the fungus of black rot, by M. G. Delacroix.—The position and approximate velocity of a meteor, by M. Jean Mascart. A meteor which was seen in the

neighbourhood of Angoulême on September 24, 1900, had a velocity of over 4 kilometres per second, and was entirely consumed at a height of about 40 kilometres.

NEW SOUTH WALES.

Royal Society, December 5, 1900.—Prof. Liversidge, F.R.S., president, in the chair.—Sir William Crookes, F.R.S., and Sir W. T. Thiselton-Dyer, K.C.M.G., F.R.S., were elected honorary members of the Society.—The following papers were read:—Intercolonial water rights as affected by federation, by H. G. McKinney.—The organisation, language, and initiation ceremonies of the aborigines of the south-east coast of New South Wales, by R. H. Mathews, and Miss M. M. Everitt.—This article described the laws of marriage, descent and relationship in force among the native tribes occupying the south-east coast of New South Wales from the Hawkesbury River to Cape Howe, on the Victorian frontier, and extending inland till met on the west by the Wiradjuri organisation. A grammar of the language of the Gundungurra, one of the principal tribes in the region dealt with, was also supplied, in which the structure of the native tongue was fully investigated and explained. The paper concluded with a short account of the Kudsha, or Narramang, a ceremony of initiation practised within the same geographical limits, by means of which the young men are admitted to the status and responsibilities of tribesmen.—Tables to facilitate the location of the cubic parabola, by C. J. Merfield. In some brief remarks the author gives an outline of the general application of the cubic parabola, when used as a transition to connect the straights and circular curves of railway lines. The paper forms a contribution to the engineering profession, and will be found useful to those engaged in the location of railway lines. A valuable table is appended, from which the constants of the curve for any case may be found. A complete numerical example illustrates the method of using the table.—Boogaldi meteorite, by Prof. Liversidge, F.R.S. This meteorite was exhibited by Mr. R. T. Baker at the June meeting of the Society, when he stated that it was found early in January 1900 at a place two miles from Boogaldi, a post town fifteen miles north-west of Coonanbarabran. Mr. Baker afterwards forwarded it to Prof. Liversidge for investigation and analysis. The meteorite is a metallic one or a siderite, and is somewhat pear-shaped; it is a little over five inches long by about three inches broad at the widest part, and it weighed before cutting 2057.5 grammes. Its sp. gr. at 14° C. was found to be 7.85. It was covered, as usual, with a closely adherent skin of fused oxides, except in one place where it had been detached, the exposed metal had a bright lustrous appearance like nickel iron. At the thick end of the meteorite the fused oxides forming the skin have been thrown into well-defined concentric waves or rings with transverse furrows in the direction of the thinner end of the meteorite—the waves and furrows gradually fade away in this direction. These waves and furrows are believed to show that the meteorite travelled through the earth's atmosphere with the thick end in front, the waves of fused oxide being thrown up by the resistance of the air, just as waves are formed in sand by the wind. That the meteorite did travel with the thick end first is confirmed by the fact that at the thin end there are longitudinal ridges and furrows in the fused skin which clearly show where the excess of fused oxide was dragged off; the luminous streak usually seen behind a meteorite is, if not wholly, certainly in part, due to the fused incandescence left in its trail. Hence the waves and other markings in the skin not only show the direction in which the meteorite travelled but also its position, *i.e.* with the curved point of the thin end downwards as represented in the photograph; for the fused oxides forming the skin are thickest on the lower side.—On a new aromatic aldehyde occurring in eucalyptus oils, by Henry G. Smith. In this paper the author records the results of his investigation (so far as he has gone) on the aldehyde occurring in so many eucalyptus oils, which had for a long time been supposed to be cuminaldehyde. The aldehyde occurs in greatest amount in the oils obtained from members of the group of Eucalypts known in Australia as the "Boxes." The true boxes, *E. hemiphloia*, *E. albens* and *E. Woolfsiana*, contain it in the largest quantity. The oil was obtained from *E. hemiphloia*, this tree growing plentifully at Belmore, in the neighbourhood of Sydney. 1000 c.c. of the crude oil were distilled, and the constituents distilling below 190° C. removed, the remainder of the oil was agitated with acid sodium sulphite

with which it readily formed a solid compound, the pure aldehyde was easily obtained from this by the usual methods. The specific gravity of the aldehyde at 15° C. was .9477. The specific rotation was $[\alpha]_D^{20} - 49.17'$, this somewhat high levorotation causes those oils containing it to be levorotatory, although mostly devoid of phellandrene. It is this aldehyde that causes the oil of *E. cnerifolia* of South Australia to be levorotatory. The pure aldehyde has an aromatic odour and is slightly yellowish in tint. It was soluble in the usual solvents. The author proposes the name aromadendral for this aldehyde, and aromadendric acid for the corresponding acid.

ST. LOUIS.

Academy of Science, March 18.—Prof. E. H. Keiser delivered an address showing the progress made in the science of chemistry during the nineteenth century.—Prof. F. E. Nipher exhibited pieces of pine board a foot square, showing the tracks of ball lightning discharges upon them like those formerly described by him in No. 6, vol. x. of the *Transactions* of the Academy. The discharges formerly described had been formed on a photographic film. The balls were very small, and wandered over the plate, leaving a track of metallic silver in their wake. In the present instance the balls were much larger, and they burned a deep channel in the wood. They are formed at the secondary spark gap of a coil. The terminals are pointed and are under control, so that the gap may be changed in length. To start the balls, the pointed terminals are put upon the wood surface, so near that the spark carbonises somewhat, after which the gap is made longer. These balls travel in either direction, when a direct current is used with a Wehnelt interrupter. This differs from the results reached on the photographic film with the Holtz machine. There the balls came from the kathode. Even when they originated at isolated points on the film, they travelled away from the kathode. In the present results, the balls have been caused to originate at isolated points, and two balls have started in opposite directions. Wood which gives little flame shows the phenomenon to best advantage, but the balls preserve their identity and travel slowly along even when completely surrounded by flames of the burning wood.

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical section), part 4 for 1900, contains the following memoirs communicated to the Society:—

December 22, 1900.—W. Voigt: On the parameters of crystallo-physics, and on directed magnitudes of higher orders (tensors, rotors, torsors, &c.). J. Wellstein: Prime forms on Riemann surfaces.

February 9.—E. Ehlers: On Atlantic palolo-worms.

DIARY OF SOCIETIES.

THURSDAY, APRIL 11.

MATHEMATICAL SOCIETY, at 5.30.—Summation of the Series $\sum_{n=0}^{\infty} I^3(\alpha+n)$.
Dr. F. Morley.—On the Projective properties of Cubic and Quartics: A. B. Basset, F.R.S.

FRIDAY, APRIL 12.

MALACOLOGICAL SOCIETY, at 8.—On the Dates of Publication of Kiener's "Species générales des Coquilles vivants," 1834-80: C. Davies Sherborn and B. B. Woodward.—New Species of Land-Shell from Central and South America: S. I. DaCosta.—Note on the Genus *Temesa*, with Descriptions of Two New Land-Shell from South America: E. R. Sykes.
GEOLOGISTS' ASSOCIATION, at 8.—The Zonal Value of Red Strata in the Carboniferous Rocks of the Midlands: Walcot Gibson.
ROYAL ASTRONOMICAL SOCIETY, at 5.—Note on some Engraved Charts of Pogson's Proposed Atlas of Variable Stars: Rev. J. G. Hagen.—Meteoric Showers from the Region $\alpha-\beta$ Persei and η Aurigæ: W. F. Denning.—Anomalous Occultations of Stars by the Moon: R. T. A. Innes.—A Method of Mechanically Compensating the Rotation of the Field of a Siderostat: H. C. Plummer.—Variations of R Horologii during 1900: A. W. Roberts.—Note on Meridian Observations of Nova Persei: A. Graham.—Further Observations of the New Star in Perseus: A. Stanley Williams.—(1) The Spectrum of Nova Persei; (2) The Spectrum of Nova Persei as a Variable Star with a Variable Spectrum: Rev. W. Sidgreaves.—*Probable Paper*: The Magnitude of Nova Persei as deduced from Photographs taken with the Astrographic Equatorial, Royal Observatory, Greenwich.

MONDAY, APRIL 15.

VICTORIA INSTITUTE, at 4.30.—The Ice Age: Warren Upham.

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TUESDAY, APRIL 16.

ROYAL INSTITUTION, at 3.—Cellular Physiology: Dr. A. Macfadyen.
ZOOLOGICAL SOCIETY, at 8.30.—Revision of the Insects of the Order Rhynchota belonging to the Family *Coveidae* in the Hope Collection at Oxford: W. L. Distant.—On some Earthworms from Tropical Africa, and on the Spermatophores of *Polytorentes* and *Stuhlmannia*: F. E. Beddard, F.R.S.—On the Identity and Distribution of the Mother-of-Pearl Oysters: a Revision of the Subgenus *Margaritifera*: Dr. H. Lyster Jameson.
INSTITUTION OF CIVIL ENGINEERS, at 8.—Modern Practice in the Manufacture and Distribution of Gas: Harry E. Jones.

WEDNESDAY, APRIL 17.

SOCIETY OF ARTS, at 8.—The Synthesis of Indigo: Prof. Raphael Meldola, F.R.S.
ROYAL METEOROLOGICAL SOCIETY, at 7.30.—Special Characteristics of the Weather of March, 1901: W. Marriott.—Vapour Tension in Relation to Wind: R. Strachan.
ROYAL MICROSCOPICAL SOCIETY, at 8.—Demonstration on the Metamorphoses of *Eschra cyanea*, illustrated by Photographs from Life: Fred Enock.
SANITARY INSTITUTE, at 8.—Sewage Purification and Standards of Purity: Dr. H. R. Kenwood and Dr. W. Butler.

THURSDAY, APRIL 18.

ROYAL INSTITUTION, at 3.—Naturalism in Italian Painting: Roger Fry.
SOCIETY OF ARTS (Indian Section), at 4.30.—Madras, the Southern Satrapy: J. D. Rees.
RÖNTGEN SOCIETY, at 8.—Meeting for Discussion. Subject: X-Ray Therapeutics: To be opened by Miss M. M. Sharpe.
CHEMICAL SOCIETY, at 8.—Researches on Moorland Waters. Part II. On the Origin of the Combined Chloride: W. Ackroyd.—Robinin, Viola-quericitrin, and Osyritrin: A. G. Perkin.—Preparation of Orthodimethoxybenzoin, and a New Method of preparing Salicylaldehydemethyl ether: J. C. Irvine.—(1) Action of Alkyl Haloids on Aldoximes and Ketoximes; Part II. (2) The Supposed Existence of Two Isomeric Triethylloxamines: Wyndham R. Dunstan and E. Goulding.—(1) Nitrocamphene, Aminocamphene, and Hydroxycamphene; (2) Action of Hydroxylamine on the Anhydrides of Bromonitrocamphane: M. O. Forster.—The Influence of Cane Sugar on the Conductivities of Potassium Chloride and Potassium Hydroxide, with Evidence of Salt Formation in the Latter Case: C. J. Martin and O. Masson.
INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Replies of Mr. H. Ravenshaw and Mr. S. F. Walker to the Discussion on their Papers read at the last Meeting.—Test-Room Methods of Alternate Current Measurements: A. Campbell.—Note on the Use of the Differential Galvanometer: C. W. S. Crawley.

FRIDAY, APRIL 19.

ROYAL INSTITUTION, at 9.—The Existence of Bodies Smaller than Atoms: Prof. J. J. Thomson, F.R.S.
INSTITUTION OF CIVIL ENGINEERS, at 8.—The Theory of Cast-Iron Beams: E. V. Clark.
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